

tongue, especially as I had not hitherto seen any trace of it in *Naïs*, and was thus anxiously watching its motions when suddenly the body turned round with ease, and I recognised in it a distinct animal.

It is a polygastric Infusorium, belonging to that genus of which one species occurs so abundantly in the rectum of the frog, but it is somewhat longer, corresponding to the form of the animal within which it lives. It is whitish, entirely covered with cilia, which are only visible when highly magnified, and are regularly arranged in rows. Within it I detected a row of perfectly transparent vesicles. The form of the body is susceptible of various alterations.

After I had watched the motions of *Opalina Naïdos*, the name given to this animal, for about a quarter of an hour in the œsophageal bulb, during which time it was moving forwards and backwards, it turned round near the mouth and receded further into the intestinal canal, in which, at first, I could not detect it. However, it returned several times with the activity peculiar to these animals, and which was not in the least impeded by the ciliated epithelium of the intestinal canal.

My sight however had become more acute during the period of observation, and hence I soon detected it in the middle of the Naïd and among several other individuals, all of which were in active motion. The circumstance that *Stylaria* and *Naïs*, according to Müller's and my own observations, take up only finely-divided nutritive matter, is so completely opposed to the supposition which I myself made of their being Infusoria which had been swallowed, that it cannot be entertained.—*Müller's Archiv*, 1846, part iv.

On the Formation of Cylindrical Masses of Snow in Orkney.

To Richard Taylor, Esq.

Sandwick Manse by Stromness, Feb. 11, 1847.

MY DEAR SIR,—A curious phænomenon in this parish has astonished and perplexed all, and filled the superstitious with no small degree of consternation. Since the 6th inst. we have had hail- or snow-showers, on the 9th snow-drift, and yesterday a slight thaw with frost again in the evening.

During the night a heavy fall of snow took place which covered the plain to the depth of several inches. Upon this pure carpet there rest thousands of large masses of snow which contrast strangely with its smooth surface. A solitary mass may be seen in a field, but in general they occur in patches from one acre to a hundred in extent, while the clusters may be half a mile asunder, and not one mass to be seen in the interval. These fields appear at a distance as if cart-loads of manure had been scattered over them and covered with snow but on examination the masses are all found to be cylindrical, like hollow fluted rollers or ladies' swan-down muffs, of which the smaller ones remind me, from their lightness and purity, but most of them

are of much greater dimensions and weight than any lady would choose to carry, the largest that I measured being $3\frac{1}{2}$ feet long and 7 feet in circumference. The weight however is not so great as might be expected from the bulk ; so loose is the texture, that one near this house which was brought in and weighed, was found to be only 64 lbs., though it measured 3 feet long and $6\frac{1}{2}$ feet in circumference. The centre is not quite hollow, but in all there is a deep conical cavity at each end, and in many there is a small opening through which one can see, and by placing the head in this cavity in the bright sun, the concentric structure of the cylinder is quite apparent. So far as I am yet informed, they do not occur in any of the adjoining parishes, and they are limited to a space of about five miles long and one broad. They may occupy about 400 acres of this, and I counted 133 cylinders in one acre, but an average of a hundred would, at a rough computation, yield a total of about 40,000.

Now the question naturally arises, what is the origin of these bodies ? I believe the first idea was that they had fallen from the clouds, and portended some direful calamity, and I hear an opinion that one had fallen on a corn-stack and been broken to pieces. It is a pity to bring down such lofty imaginations, and to deprive these cylinders of their high descent, but I prefer truth, when it can be discovered, to the loftiest theory. I must at once, then, set aside the idea that they fell from the atmosphere in their cylindrical form, as the first one I examined satisfied me that its symmetry and loose texture must have been immediately destroyed on coming in rude contact with this earth.

Farther observation has convinced me that they have been formed by the wind rolling up the snow, as boys form large snow-balls. This is proved by examination of the *bodies themselves* ; their round form, concentric structure, and fluted surface all show this mode of formation. Again, it is proved by their *position* : none are found on the weather side of hills or steep eminences, where the wind could not drive them up, nor close to leeward of any wall or perpendicular bank from which they seem to have originated—the nearest well-formed small ones being 60 yards to leeward, and the large ones 100 yards. All nearer than this are fragments that have not gone on to completion, but broken down in their passage, and the different portions of the wreck form the nuclei of others. Many however are found blown to the windward side of walls or over the lee side of banks. Indeed, they are found almost exclusively on the leeward side of hills and eminences, where both the wind and declivity assisted in rolling them along, or on plains so exposed that the wind alone operated without the declivity.

I shall only add, that this mode of formation is proved by the *direction* in which these cylinders lie. The wind has been from the north for four days, and I believe that it was so all night, when I am told it blew strong. Now they are all lying with their ends east and west, and their side to the wind ; and farther, in some cases,

their tracks are still visible in the snow for twenty or thirty yards on their north side, from which they have gathered up their concentric coats ; and I understand these were still more evident at an early hour before a snow-shower obliterated them in many places.

I am, Sir, yours very truly,

CHARLES CLOUSTON.

METEOROLOGICAL OBSERVATIONS FOR FEB. 1847.

Chiswick.—February 1. Overcast. 2. Slight snow. 3. Cloudy. 4. Cloudy: frosty. 5. Overcast. 6. Slight rain. 7. Overcast: snowing. 8. Sharp frost: snowing. 9. Clear and frosty: intense frost at night. 10. Severe frost: snowing. 11. Overcast: slight thaw: severe frost. 12. Intense frost: clear: severe frost. 13. Clear and frosty. 14. Rain. 15. Cloudy: boisterous. 16. Overcast: rain. 17. Fine. 18. Densely clouded: boisterous. 19. Boisterous: fine: clear and calm. 20, 21. Overcast: fine. 22. Hazy: overcast. 23. Hazy and cold. 24. Dry air: clear and frosty. 25. Slight haze. 26. Hazy. 27, 28. Cloudy and cold.

Mean temperature of the month	34°·79
Mean temperature of Feb. 1846	43 ·32
Mean temperature of Feb. for the last twenty years	39 ·55
Average amount of rain in Feb.	1·61 inch.

Boston.—Feb. 1. Cloudy: snow P.M. 2. Cloudy: snow early A.M.: snow nearly all day. 3. Cloudy: snow P.M. 4. Fine. 5—7. Cloudy. 8—10. Fine. 11. Cloudy: snow on the ground. 12. Cloudy. 13. Fine. 14. Cloudy: rain early A.M. 15. Cloudy. 16. Cloudy: rain early A.M. 17. Fine: rain early A.M. 18. Fine: rain P.M. 19. Stormy. 20—23. Cloudy. 24. Fine. 25. Cloudy. 26. Cloudy: snow early A.M. 27. Fine: snow P.M. 28. Fine: melted snow.

Sandwich Manse, Orkney.—Feb. 1. Snow: clear. 2. Snow: clear: frost: clear. 3. Bright: thaw: drizzle. 4. Damp: drizzle. 5. Showers: lightning. 6. Hail-showers: aurora. 7. Hail-showers: snow-showers: aurora. 8. Snow-showers: aurora. 9. Snow-drift. 10. Sleet: thaw: snow: frost. 11. Deep snow*: snow. 12. Deep snow: bright: showers: thaw. 13. Thaw: rain. 14. Sleet-showers. 15. Cloudy: showers. 16. Showers. 17. Showers: rain. 18. Showers. 19. Showers: clear. 20. Cloudy: rain. 21. Bright: showers. 22. Bright: clear: aurora: large halo. 23. Bright: clear. 24. Cloudy: clear: aurora. 25. Clear: frost: clear. 26. Bright: clear. 27. Clear: cloudy. 28. Cloudy.

Applegarth Manse, Dumfries-shire.—Feb. 1. Frost: snow lying half an inch deep. 2. Frost: slight shower: snow. 3. Frost. 4. Frost, but mild. 5. Thaw: slight rain. 6. Thaw: fair. 7. Frost: clear and fine. 8. Frost, hard. 9. Frost: threatening snow. 10. Frost: sprinkling snow. 11. Frost: fine: clear. 12. Frost: sprinkling snow. 13. Frost A.M.: rain P.M. 14. Thaw, soft and fine. 15. Frost, slight: thaw: rain. 16—18. Rain. 19. Rain and sleet: fierce wind. 20. Rain and wind. 21. Fair and fine: thrush singing. 22. Rain early A.M.: cleared. 23. Slight hoar-frost: clear. 24. Frost: clear and bright sun. 25. Hoar-frost. 26, 27. Frost. 28. Frost: clear and fine.

Mean temperature of the month	36°·25
Mean temperature of Feb. 1846	43 ·4
Mean temperature of Feb. for twenty-five years	37 ·2
Mean rain in Feb. for twenty years	2 inches.

* This morning the snow in many places is found rolled up in hollow fluted cylinders, the largest of which measures 3½ feet long and 7 feet in circumference: one which measures 3 feet by 6½ weighs 64 lbs.